

**BY ORDER OF THE CHIEF,  
NATIONAL GUARD BUREAU**

**MANPOWER STANDARD 23E1A2**

**28 AUGUST 2003**

***Manpower Standard***

**COMMUNICATIONS/NAVIGATION (COMM/NAV)**



**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This Air National Guard Manpower Standard (ANGMS) quantifies the manpower required to accomplish the tasks described in the process oriented description (POD) for varying levels of workload in the 189th Airlift Wing whose mission it is to provide aircrew training for students from each branch of the military that flies the C-130 aircraft and from 27 foreign countries. This standard applies to the 189th Airlift Wing, Little Rock Air Force Base, Arkansas, and encompasses all major processes performed within the Communications/Navigation function. It does not apply to any other units. This standard is applicable to peacetime operations only. The Air National Guard (ANG) is authority for the approval and publication of ANG Manpower Standards. Air Force (AF) and ANG directives contain policy and procedural guidance for the operation of the Communications/Navigation (COMM/NAV). This standard was developed in accordance with AF Instruction (AFI) 38-201, *Determining Manpower Requirements*, and AF Manual (AFMAN) 38-208, Volume 1, *Air Force Management Engineering Program (MEP) Processes*, and AFMAN 38-208, Volume 2, *Air Force Management Engineering Program (MEP) - Quantification Tools*. Send comments and suggested improvements on AF IMT 847, *Recommendation for Change of Publication*, through channels, to ANG, Management Engineering Branch (ANG/XPME/Operating Location TN [OLTN]), 106 Briscoe Drive, McGhee Tyson Air National Guard Base, TN 37777-6283.

## **1. STANDARD DATA.**

1.1. Approval Date: 28 August 2003.

1.2. Man-hour Data Sources. The Operational Audit (historical record and technical estimate) technique was used to collect/determine man-hour/manpower data.

1.3. Standard Manpower Equation:  $Y = 457.4 + 50.30X$ .

#### 1.4. Workload Factor.

1.4.1. Title: X= Primary Aircraft Inventory (PAI).

1.4.2. Definition: Number of PAI authorized to support the unit training mission.

1.4.3. Source: USAF Programming Document (PD), Volume 2, maintained by NGB/FM.

#### 1.5. Points of Contact.

1.5.1. Functional: Col John J Samuhel, 189 MX/CC

1.5.2. Manpower: George W. Tatum III, ANG/XPME/OLTN

### 2. APPLICATION INSTRUCTIONS.

2.1. Equation. Apply the equation in Paragraph 1.3., to determine the required man-hours.

2.2. Man-Hour Availability Factor (MAF). Divide the resulting man-hours by the appropriate MAF/overload factor. The answer, rounded up, will quantify the required manpower.

2.3. Upper and Lower Extrapolation Limits:

2.3.1.  $Y_U = 1074.748$ .

2.3.2.  $Y_L = 644.849$ .

**3. STATEMENT OF CONDITIONS.** The normal hours of operation for this function are 80 hours per two-week period. The alternate work schedule of eight nine hour days, and one eight hour day is the norm. No environmental, equipment, or facility conditions affect this Manpower Standard.

DANIEL JAMES III, Lieutenant General, USAF  
Director, Air National Guard

**Attachment 1**

**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

*References*

AFI 38-201 *Determining Manpower Requirements*

AFMAN 38-208, Volume 1, *Air Force Management Engineering Program (MEP)-Process*

AFMAN 38-208, Volume 2, *Air Force Management Engineering Program (MEP)-Quantification Tools*

AFMS 00AA, *Standard Indirect Description*

*Abbreviations and Acronyms*

**ADF** - Automatic Direction Finder

**AF** - Air Force

**AFMS** - Air Force Manpower Standard

**AFSC** - Air Force Specialty Code

**ANG** - Air National Guard

**ANGMS** - Air National Guard Manpower Standard

**CAMS** - Core Automated Maintenance System

**CARA** - Combined Altitude Radar Altimeter

**COMSEC** - Communications Security

**CPR** - Cardiopulmonary Resuscitation

**HF** - High Frequency

**HHQ** - Higher Headquarters

**IFF** - Identification Friend Or Foe

**IMT** - Information Management Tool

**MAF** - Man-Hour Availability Factor

**MEP** - Management Engineering Program

**MSI** - Manpower Standards Implementation

**OI** - Office Instruction

**PAI** - Primary Aircraft Inventory

**PD** - Programming Document

**PMEL** - Precision Measurement Laboratory

**POD** - Process Oriented Description

**TO** - Technical Order

**TACAN** - Tactical Air Navigation

**TCTO** - Time Compliance Technical Order

**UHF** - Ultra High Frequency

**UHF/DF** - Ultra High Frequency/Direction Finder

**UMD** - Unit Manpower Document

**UTA** - Unit Training Assembly

**VHF** - Very High Frequency

**VOR** - VHF Omni Range

### *Terms*

**Air National Guard Manpower Standard (ANGMS).** A numbered, specialized publication that quantifies manpower requirements for a work center, it also includes approved variances. See AFI 38-201.

**Man-Hour.** A unit of measuring work. It is equivalent to one person working at a normal pace for 60 minutes, two people working at a normal pace for 30 minutes, or similar combination of people working at a normal pace for a period of time equal to 60 minutes.

**Manpower Standard.** The basic tool used to determine the minimum level of manpower required to support a function. It is a quantitative expression that represents a work center's man-hour requirements in response to varying levels of workload.

**Process Oriented Description.** A format that shows work center responsibilities structured for easy measurement of work categories, tasks and subtasks.

## Attachment 2

PROCESS ORIENTED DESCRIPTION  
COMMUNICATIONS/NAVIGATION

Table A2.1. Listing of Functional Processes.

1.	ON-EQUIPMENT COMMUNICATION/NAVIGATION MAINTENANCE:
1.1.	MAINTAINS AIRCRAFT SYSTEM AND COMPONENT. Inspects, troubleshoots, and repairs on-equipment.
1.1.1.	MAINTAINS RADIO NAVIGATION SYSTEM:
1.1.1.1.	MAINTAINS TACTICAL AIR NAVIGATION (TACAN) SYSTEM.
1.1.1.2.	MAINTAINS VHF OMNI RANGE (VOR) SYSTEM.
1.1.1.3.	MAINTAINS ULTRA HIGH FREQUENCY/DIRECTION FINDER (UHF/DF) SYSTEM.
1.1.1.4.	MAINTAINS AUTOMATIC DIRECTION FINDER (ADF) SYSTEM.
1.1.2.	MAINTAINS ULTRA HIGH FREQUENCY (UHF) COMMUNICATION RADIO.
1.1.3.	MAINTAINS INTERPHONE SYSTEM.
1.1.4.	MAINTAINS IDENTIFICATION FRIEND OR FOE (IFF) SYSTEM.
1.1.5.	MAINTAINS RADAR NAVIGATION SYSTEM:
1.1.5.1.	MAINTAINS WEATHER RADAR SYSTEM.
1.1.5.2.	MAINTAINS COMBINED ALTITUDE RADAR ALTIMETER (CARA) SYSTEM.
1.1.5.3.	MAINTAINS DOPPLER SYSTEM.
1.1.6.	MAINTAINS COMMUNICATIONS SYSTEM:
1.1.6.1.	MAINTAINS VERY HIGH FREQUENCY (VHF) COMMUNICATIONS SYSTEM.
1.1.6.2.	MAINTAINS HIGH FREQUENCY (HF) COMMUNICATIONS SYSTEM.
1.1.6.3.	MAINTAINS MISCELLANEOUS COMMUNICATIONS EQUIPMENT.
1.1.6.4.	MAINTAINS EMERGENCY COMMUNICATIONS SYSTEM.

1.1.7.	MAINTAINS INSTRUMENT SYSTEM.
1.1.8.	MAINTAINS ACCIDENT INVESTIGATION RECORDING SYSTEM.
1.1.9.	MAINTAINS STATION KEEPING EQUIPMENT.
1.1.10.	MAINTAINS AIRCRAFT WIRING, ALL SYSTEMS AND THOSE ASSOCIATED WITH 1553 DATA BUSS.
1.2.	PERFORMS INSPECTION: Perform special, phase and hourly aircraft inspection. Phase/hourly inspection includes work card mandatory items, extensive maintenance, radar antenna removal/installation, and checks. Access panel removal/lube, and refurbish of controls, indicators in the cockpit.
1.2.1.	PERFORMS SPECIAL INSPECTION.
1.2.2.	PERFORMS HOME STATION CHECK.
1.2.3.	PERFORMS MAJOR ISOCHRONAL INSPECTION.
1.2.4.	PERFORMS FIRST MINOR INSPECTION.
1.2.5.	PERFORMS SECOND MINOR INSPECTION.
1.2.6.	PERFORMS THIRD INSPECTION.
1.2.7.	PERFORMS ACCEPTANCE INSPECTION.
2.	OFF-EQUIPMENT MAINTENANCE:
2.1.	MAINTAINS AIRCRAFT SYSTEM COMPONENT. Inspects, checks, aligns, troubleshoots, and bench checks equipment. Performs corrosion control.
2.1.1.	MAINTAINS IFF SYSTEM.
2.1.2.	MAINTAINS VHF COMMUNICATIONS SYSTEM.
2.1.3.	MAINTAINS UHF COMMUNICATIONS SYSTEM.
2.1.4.	MAINTAINS INTERPHONE SYSTEM.
2.1.5.	MAINTAINS COMMUNICATIONS SYSTEM.
2.1.6.	MAINTAINS RADIO NAVIGATION SYSTEM.
2.1.6.1.	MAINTAINS TACAN SYSTEM.

2.1.6.2.	MAINTAINS VOR SYSTEM.
2.1.6.3.	MAINTAINS UHF/DF SYSTEM.
2.1.6.4.	MAINTAINS ADF SYSTEM.
2.1.7.	MAINTAINS RADAR NAVIGATION SYSTEM:
2.1.7.1.	MAINTAINS WEATHER RADAR SYSTEM.
2.1.7.2.	MAINTAINS CARA SYSTEM.
2.1.7.3.	MAINTAINS DOPPLER SYSTEM
2.1.8.	MAINTAINS MISCELLANEOUS COMMUNICATIONS EQUIPMENT.
3.	COMMUNICATIONS SECURITY (COMSEC):
3.1.	UPDATES AND DEVELOPS OFFICE INSTRUCTION (OI), POLICY, AND PROCEDURE.
3.2.	INVENTORIES COMSEC.
3.3.	PICKS UP AND DELIVERS FOR DESTRUCTION.
4.	TIME COMPLIANCE TECHNICAL ORDER (TCTO). Performs TCTO.
5.	BENCH SET AND MOCK-UP. Inspects, aligns, and repairs bench set mock-up and subsystems component.
6.	SHOP SUPPORT-GENERAL. Performs shop support general tasking including fabrication (bending, cutting, forming, casting, holding, machining, soldering assembly, local manufacture, etc.) and stenciling/painting (stenciling, lettering, installing decals, instrument range marking, etc., and painting for cosmetic purposes only).
7.	CORE AUTOMATED MAINTENANCE SYSTEM (CAMS) MAINTENANCE. Makes input to CAMS. Performs retrieval, reconciles data files, updates maintenance input, researches and/or orders part, etc.
8.	HAZARDOUS WASTE PROGRAM MANAGEMENT:
8.1.	PROCESSES HAZARDOUS WASTE. Identifies, labels, contains, and disposes of hazardous waste.
8.2.	PROCESSES ACCUMULATION POINT. Maintains hazardous waste accumulation point, satellite collection area and container.

8.3.	MAINTAINS PROTECTIVE EQUIPMENT. Inspects and performs tasks associated in maintaining protective equipment.
9.	GROUND HANDLING, SERVICING, AND RELATED TASK. Tows, positions, parks, services aircraft and performs general maintenance not included in Categories 1, 2, 3, 4, and 5.
10.	PRECISION MEASUREMENT LABORATORY (PMEL) RUN. Maintains, updates, tracks equipment due dates, and prepares equipment for transportation to calibration site.
11.	BENCH STOCK MAINTENANCE. Inspects, orders, stocks, and issues bench stock.
12.	TECHNICAL ORDER (TO) SUB ACCOUNT. Receives and posts data change to T.O. file. Maintains file for serviceability.
13.	SPECIAL PLANNING OR SCHEDULING:
13.1.	PREPARES FOR UNIT TRAINING ASSEMBLY (UTA). Performs planning/scheduling/cleanup and associated tasks for UTA preparation.
13.2.	PREPARES FOR MOBILITY/DEPLOYMENT PARTICIPATION. Maintains proficiency in cardiopulmonary resuscitation (CPR) and Self-Aid Buddy Care.
13.3.	PREPARES FOR SPECIAL PROGRAM. Prepares and performs special program task, duty, and responsibility levied by higher headquarters (HHQ), e.g., Major Air Commands, the Air National Guard Readiness Center, National Guard Bureau or host base.
14.	TRAVEL. Travels as it relates to the mission for meetings, conferences, workshops, and training.
15.	MANAGEMENT:
15.1.	ADMINISTERS PERSONNEL:
15.1.1.	INDOCTRINATES PERSONNEL. Conducts initial interview, makes original job assignment, and acquaints newly assigned personnel with the work center.
15.1.2.	RATES PERFORMANCE:
15.1.2.1.	PREPARES PERFORMANCE REPORT. Develops performance report by researching, evaluating, drafting, proofreading typed copy, marking boxes, and signing completed report.
15.1.2.2.	INDORSES PERFORMANCE REPORT. Develops endorsement by researching,

	evaluating, drafting, proofreading typed copy, and signing completed report.
15.1.2.3.	NOMINATES PERSONNEL FOR AWARD. Develops recommendation by researching, evaluating, drafting, proofreading typed copy, and signing completed product.
15.1.2.4.	MONITORS MANAGEMENT IMPROVEMENT PROGRAM. Assists subordinate in developing improvement suggestion, and processes suggestion received for evaluation.
15.1.2.5.	MONITORS TRAINING. Reviews training record and monitors progress of subordinate.
15.2.	SUPERVISES PERSONNEL:
15.2.1.	SCHEDULES PERSONNEL. Schedules subordinate supervisor to provide adequate supervisory coverage in proportion to each shift's workload. Schedules leaves and passes.
15.2.2.	DEVELOPS DIRECTIVE. Develops policy, plan, procedure, operating instruction, checklist, and performance standard by researching, drafting, proofreading typed copies, and signs.
15.3.	DIRECTS AND CONTROLS SUBORDINATE WORK CENTER ACTIVITY:
15.3.1.	MONITORS WORK PRIORITY. Monitors scheduled and unscheduled work priority.
15.3.2.	PROVIDES GUIDANCE. Translates the broad management objectives of the unit commander into technical guidance and direction to subordinate supervisors for work force management.
15.4.	ASSISTS UNIT MOBILITY. Assists in the preparation of the unit mobility plan, identifies mobility resources, and evaluates the unit readiness capability.
15.5.	MONITORS SPECIAL AND RECURRING PROJECT OR PROGRAM.
15.6.	REVIEWS INCOMING AND OUTGOING COMMUNICATION. Reviews incoming distribution for information and necessary action. Reviews outgoing distribution for completeness, accuracy of content, and signs, when necessary.
15.7.	REVIEWS REPORT AND STATISTICAL DATA. Reviews report and statistical data for the purpose of evaluating each work center, and identifies exception or trend that requires management attention. Reviews quality control report, makes comment, and signs, when required.

15.8.	INSPECTS FACILITY. Performs periodic inspection of work center for adequate housekeeping and identifies hazard affecting safety, fire, or security. Identifies equipment and facility condition requiring maintenance or repair.
15.9.	INVESTIGATES ACCIDENT OR INCIDENT. Investigates ground or explosive incident and prepares required report.
10.	INDIRECT. Indirect work involves those tasks that are not readily identifiable with the work center's specific product or service. The major categories of standard indirect work are: Administers Civilian, Officer, and Enlisted Personnel; Directs Work Center Activity; Provides Administrative Support; Prepares for and Conducts/Attends Meeting; Administers Training; Manages Supplies; Maintains Equipment; and Performs Cleanup.

**Attachment 3****MANPOWER TABLE****A3.1. Standard Manpower Table**

<b>Air Force Specialty Title</b>	<b>AFSC</b>	<b>Grade</b>	<b>Manpower Requirement</b>			
Comm & Nav Sys Supvr	2A1X3	Civ	1	1	1	1
Comm & Nav Mech	2A1X3	Civ	3	4	5	6
Total			4	5	6	7

**NOTE.** AFSCs may be adjusted at the discretion of the Commander.